1.5-Micron Amplifier for High-Average Power, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

Aqwest proposes to develop a novel, compact and rugged high-peak power erbium (Er) laser amplifier at 1.5 m to for NASA remote sensing trasmitter. The project will take advantage our novel and highly successful edge-pumped disk laser (EPDL) multi-passed amplifier we are developing for the US Army, Navy, and the Department of Energy (DOE) applications. In Phase I, we will use our existing suite of models to determine the feasibility of a 1.5- m EPDL-based laser amplifier and identify preferred operating regimes. We will test our existing Er:glass laser disk in our existing EPDL test bed to further calibrate/anchor our models over the wavelength range of interest, especially at around 1.547 m. Using this information, we will design and fabricate a new laser disk with optimized Er doping and improved waste heat handling capability for the targeted operating regime, and test its performance under relevant conditions, and confirm the models. In Phase II, we will design, fabricate, test, and deliver a prototype 1.5- m EPDL laser amplifier.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: 1. Remote sensing

To the commercial space industry:

Potential Non-NASA Commercial Applications: 1. Eye-safer laser material processing (supplanting traditional 1-micron lasers) 2. Eye-safer communication 3. Remote sensing

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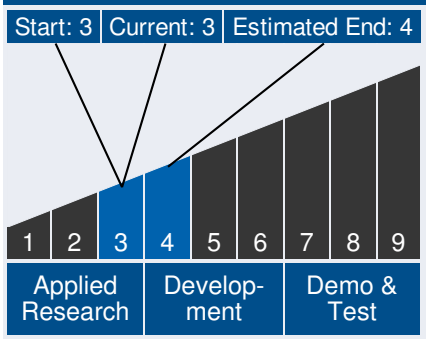
Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

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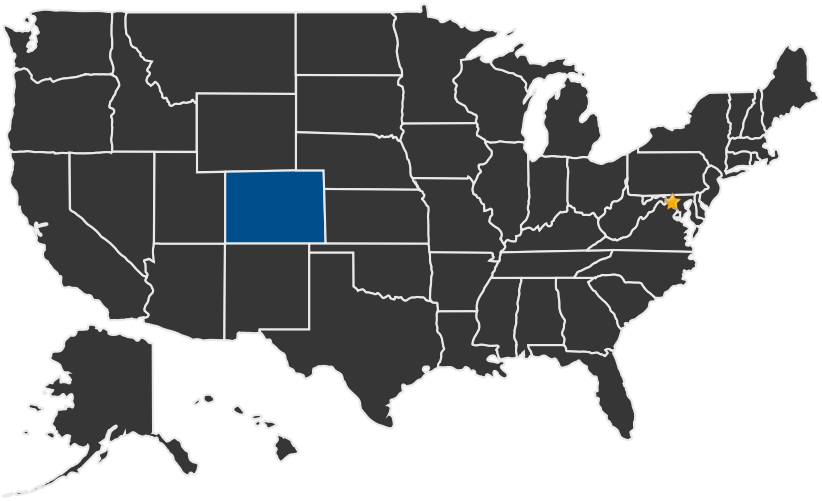
U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Goddard Space Flight Center

Other Organizations Performing Work:

- Aqwest, LLC (Larkspur, CO)

PROJECT LIBRARY

Presentations

- Briefing Chart
  - (http://techport.nasa.gov:80/file/23361)

Management Team *(cont.)*

Principal Investigator:

- John Vetrovec

Technology Areas

Primary Technology Area:
Science Instruments, Observatories, and Sensor Systems (TA 8)
└ Remote Sensing Instruments and Sensors (TA 8.1)
  └ Lasers (TA 8.1.5)

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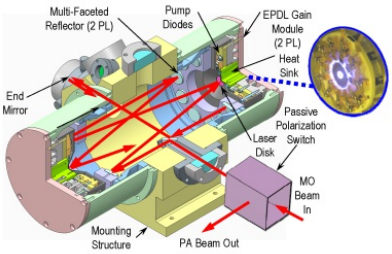
IMAGE GALLERY



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DETAILS FOR TECHNOLOGY 1

Technology Title

1.5-Micron Amplifier for High-Average Power, Phase I

Potential Applications

1. Remote sensing